

CLAIMS

What is claimed is:

1. A method of wideband speech encoding, comprising:
 - (a) partitioning a frame of digital speech into a lowband and a highband;
 - (b) encoding said lowband;
 - (c) encoding said highband using a linear prediction excitation from noise modulated by a portion of said lowband; and
 - (d) combining said encoded lowband and said encoded highband to form an encoded wideband speech.
2. A method of wideband speech decoding, comprising:
 - (a) decoding a first portion of an input signal as a lowband speech signal;
 - (b) decoding a second portion of an input signal as a noise-modulated excitation of a linear prediction encoding wherein said noise modulated excitation is noise modulated by a portion of the results of said decoding as a lowband speech signal of preceding step (a); and
 - (c) combining the results of foregoing steps (a) and (b) to form a decoded wideband speech signal.
3. A wideband speech encoder, comprising:
 - (a) a lowband filter and a highband filter for digital speech;
 - (b) a first encoder with input from said lowband filter;
 - (c) a second encoder with input from said highband filter and said lowband filter, said second encoder using an excitation from noise modulated by a portion of output from said lowband filter; and
 - (d) a combiner for the outputs of said first encoder and said second encoder to output encoded wideband speech.

4. A wideband speech decoder, comprising:
 - (a) a first speech decoder with an input for encoded narrowband speech;
 - (b) a second speech decoder with an input for encoded highband speech and an input for the output of said first speech decoder, said second speech decoder using excitation of noise modulated by a portion of the output of said first speech decoder; and
 - (c) a combiner for the outputs of said first and second speech decoders to output decoded wideband speech.
5. The method of claim 1, further comprising:
 - (a) decimating the sampling rate of both said lowband and said highband;
 - (b) encoding said decimated lowband from step (a) including a first method of quantization;
 - (c) reversing the spectrum of a baseband image of said decimated highband from step (a); and
 - (d) encoding the results of step (c) including said first method of quantization.
6. The method of claim 2, wherein:
 - (a) said decoding a first portion of an input signal as a lowband speech signal includes using a first codebook; and
 - (b) said decoding a second portion of an input signal as a highband speech signal includes using said first codebook.
7. The wideband speech encoder of claim 3, wherein:
 - (a) said first encoder uses a first quantizer; and
 - (b) said second encoder using said first quantizer.

8. The wideband speech decoder of claim 4, wherein:
 - (a) said first speech decoder with an input for encoded narrowband speech includes an LP codebook; and
 - (b) said second decoder using said LP codebook.